Cholera

1. DISEASE REPORTING

A. Purpose of Reporting and Surveillance

1. To identify persons infected with *Vibrio cholerae* and to prevent transmission from such individuals.
2. To identify sources of transmission (e.g., contaminated water or a contaminated lot of shellfish) and to prevent further transmission from such sources.

B. Legal Reporting Requirements

1. Health care providers: **immediately** notifiable to local health jurisdiction.
2. Hospitals: **immediately** notifiable to local health jurisdiction.
3. Laboratories: **immediately** notifiable to local health jurisdiction, specimen submission required.
4. Local health jurisdictions: **immediately** notifiable to the Washington State Department of Health (DOH) Communicable Disease Epidemiology Section (CDES): 1-877-539-4344.

C. Local Health Jurisdiction Investigation Responsibilities

1. Ensure that laboratories submit specimens to DOH Public Health Laboratories (PHL).
2. Implement appropriate infection control measures.
3. Report all *confirmed* cases (toxigenic *V. cholerae*) to CDES (see definition below). Complete both the standard cholera case report from (available at: www.doh.wa.gov/notify/forms/cholera.doc) and the CDC Surveillance Report Form (available at: http://www.cdc.gov/foodborneoutbreaks/documents/cholera_vibrio_report.pdf)
4. Persons with nontoxigenic strains of *V. cholerae* are reported as cases of vibriosis on the vibriosis case report form (www.doh.wa.gov/notify/forms/vibriosis.doc).

2. THE DISEASE AND ITS EPIDEMIOLOGY

Background

Cholera is a diarrheal illness that primarily exists in developing countries. The disease is strongly associated with consumption of unsafe water, poor hygiene, poor sanitation and crowded living conditions.

A. Etiologic Agents

Vibrio cholerae are gram negative bacteria. *V. cholerae* serogroups O1, O139 and O141 are the only known serogroups to produce the enterotoxin that causes cholera. Nontoxigenic *V. cholerae* can cause a diarrheal illness but do not cause cholera.

B. Description of Illness

Cholera is an acute bacterial enteric disease characterized in its severe form by sudden onset, profuse painless watery stools (rice water stool), nausea and vomiting early in the course of illness, and, in untreated cases, rapid dehydration, acidosis, and circulatory collapse. Asymptomatic or mild infection is frequent, especially with the El Tor biotype. Death may occur within hours in severe untreated cases (cholera gravis), and the case-fatality rate may exceed 50%; with proper treatment, the rate is less than 1%. Differential diagnoses include other bacterial infections (including nontoxigenic vibriosis, *E. coli* O157:H7, salmonellosis, shigellosis), viral diarrhea, amebic dysentery and schistosomiasis.

C. Cholera in Washington State

During 1990–2007, only three reports of toxigenic *V. cholerae* infection have been received at DOH, two in 1992, one in 2002. These cases were associated with travel outside the United States.

D. Reservoirs

During epidemics, humans are the primary reservoir for *V. cholerae*. Cholera is endemic in much of the developing world with potential for exposures to contaminated food and water during travel. Similar to other vibrios, *V. cholerae* also naturally occur in aquatic environments including the Gulf of Mexico.

E. Modes of Transmission

Cholera is most commonly acquired by ingesting food or water contaminated with feces or vomitus of infected persons. Interestingly, direct person-to-person transmission is rare reflecting the high inoculum required to transmit the disease.

Since *V. cholerae* also naturally occur in aquatic environments, the disease can be acquired by ingesting raw or undercooked shellfish. Sporadic cases have occurred in the United States after consumption of shellfish from the Gulf of Mexico.

F. Incubation Period

From a few hours to 5 days, usually 2–3 days

G. Period of Communicability

Persons are presumably communicable for as long as stools are positive, which is usually only a few days after recovery. A carrier state occasionally persists for several months.

H. Treatment

The primary treatment for cholera is oral or parenteral rehydration therapy to correct dehydration and electrolyte abnormalities. Antibiotics are reserved for those who are moderately or severely ill. Antibiotic choice depends on local resistance patterns.

3. CASE DEFINITIONS

A. Clinical Criteria for Diagnosis

An illness characterized by diarrhea and/or vomiting; severity is variable.

B. Laboratory Criteria for Diagnosis

1. Isolation of toxigenic (i.e., cholera toxin-producing) *Vibrio cholerae* O1 or O139 from stool or vomitus, or
2. Serologic evidence of recent infection.

C. Case Definition

Confirmed: a clinically compatible case that is laboratory confirmed.

D. Comment

Illnesses caused by strains of *V. cholerae* other than toxigenic *V. cholerae* O1 or O139 should be reported as cases of vibrioisis, not as cholera. The etiologic agent of a case of cholera should be reported as either *V. cholerae* O1 or *V. cholerae* O139.

4. DIAGNOSIS AND LABORATORY SERVICES

A. Diagnosis

The diagnosis is most commonly made by isolation of toxigenic *V. cholerae* from vomitus or feces. Laboratory personnel need to be notified when cholera is suspected because identifying *V. cholerae* by culture requires special techniques that are not routinely performed. Laboratories in Washington are required to submit isolates to PHL for confirmatory testing.

B. Tests Available at PHL

DOH Public Health Laboratories provide isolate confirmation/identification for *Vibrio cholerae* and can determine whether the serotype is O1. All organisms identified as *V. cholerae* are then sent to the CDC for further serotyping (if non-O1) and testing for the production of enterotoxin. In an outbreak situation, PHL will also culture stool for *Vibrio cholerae*. Contact CDES for approval prior to submitting specimens.

C. Specimen Collection

For stool culturing, use a sterile applicator swab to collect specimen, insert the swab into Cary-Blair transport medium, push the cap on tightly, and mail immediately.

Please enclose a completed PHL Enteric Bacteriology form (available at: http://www.doh.wa.gov/EHSPHL/PHL/Forms/EntericBacteriology.pdf) with all isolates and stool specimens.

5. ROUTINE CASE INVESTIGATION

A. Identify Potential Sources of Infection

Ask about possible exposures during the 5 days before onset. Interview the case and others who may be able to provide pertinent information, most importantly:

1. Travel outside the United States.
2. Consumption of untreated water, and potentially contaminated food and shellfish while traveling.
3. Contact with recent foreign arrivals.

4. Contact with sewage or human excreta.
5. Consumption or handling of raw/undercooked shellfish in the United States.

B. Identify Potentially Exposed Persons

Identify travel companions and close contacts, interview for symptoms, and arrange for laboratory testing for those with diarrhea.

C. Environmental Evaluation

No environmental evaluation is needed for those who acquired their infection while traveling in another country.

Since *Vibrio* organisms proliferate rapidly at room temperatures, shellfish containing very low levels of organisms at harvest can become highly contaminated if not handled properly. If the source of illness appears to be shellfish from the United States, interview the patient and/or contact the restaurant to determine the type of shellfish consumed, and how the shellfish were prepared and handled prior to consumption. Complete the CDC surveillance report form (available at: http://www.cdc.gov/foodborneoutbreaks/documents/cholera_vibrio_report.pdf) and convey the information collected as soon as possible to either CDES (206-418-5500 or 877-539-4344) or the DOH Shellfish Program (360-236-3330).

6. CONTROLLING FURTHER SPREAD

A. Infection Control Recommendations

1. Hospitalized patients should be cared for using standard precautions. Contact precautions should be used for diapered or incontinent persons for the duration of illness or to control institutional outbreaks.
2. Work or Day Care Restrictions: Persons should not work as food handlers, day care workers, or health care workers or attend school or day care as long as they have diarrhea.

   In view of the potential severity of the disease, CDES recommends that food handlers, child care workers, healthcare workers, and child care attendees with confirmed or highly suspect cholera have two negative stool specimens before returning to work or child care. The stool specimens should be collected 24 hours apart and not sooner than 48 hours after the last dose of antibiotics, if antibiotics were given. Restrictions can be waived or modified at the discretion of the local health jurisdiction. Individuals may continue to be infectious for several weeks, however, and should be cautioned accordingly.
3. Cases should not prepare food for others in the home while symptomatic with diarrhea.
4. Cases should be educated regarding effective hand washing, particularly after caring for diapered children, after using the toilet, and after handling soiled clothing or linens.

B. Case Management:

Stool cultures to document that fecal shedding of the organism has stopped are not routinely indicated, except for the purpose of lifting work and child care restrictions (see above).

C. Contact Management

Contacts with symptoms consistent with cholera should be referred to a health care provider for evaluation and diagnostic testing.

Chemoprophylaxis of asymptomatic close contacts is generally not recommended in the United States as secondary transmission is rare, but may be indicated if there is high likelihood of fecal exposure.

D. Management of Other Exposed Persons

Travel companions should be educated about symptoms and told to consult a health care provider for diagnostic testing and treatment if symptomatic.

E. Environmental Measures

Generally none.

7. MANAGING SPECIAL SITUATIONS

A. Outbreaks

If you suspect an outbreak, contact CDES and begin an investigation immediately.

8. ROUTINE PREVENTION

A. Immunization Recommendations:

Production of the only licensed cholera vaccine in the United States has been discontinued. Cholera immunization is no longer required for travelers to or from cholera affected areas.

B. Prevention Recommendations (available at http://www.cdc.gov/ncidod/dbmd/diseaseinfo/cholera_g.htm)

The risk for cholera is very low for U.S. travelers visiting areas with epidemic cholera. When simple precautions are observed, contracting the disease is unlikely.

All travelers to areas where cholera has occurred should observe the following recommendations:

1. Drink only water that you have boiled or treated with chlorine or iodine. Other safe beverages include tea and coffee made with boiled water and carbonated bottled beverages with no ice.
2. Eat only foods that have been thoroughly cooked and are still hot, or fruit that you have peeled yourself.
3. Avoid undercooked or raw fish or shellfish, including ceviche (raw fish marinated in citrus juice.)
4. Make sure all vegetables are cooked and avoid salads.
5. Avoid foods and beverages from street vendors.
6. Do not bring perishable seafood back to the United States.

ACKNOWLEDGEMENTS

This document is a revision of the Washington State Guidelines for Notifiable Condition Reporting and Surveillance published in 2002 which were originally based on the Control of Communicable Diseases Manual (CCDM), 17th Edition; James Chin, Ed. APHA 2000. We would like to acknowledge the Oregon Department of Human Services for developing the format and select content of this document.